

Data
on Demand
with

Unidisc



Low Cost Random Access Storage for UNIVAC 1004 and 1005 Computers



Unidisc is...

a low-cost unit for storing and handling data in a random manner by means of interchangeable disc cartridges. With these new storage units, UNIVAC 1004 and 1005 Computer Systems perform random access data processing, eliminating the time-consuming serial searches often required in the handling of punched-card files.

Two exclusive Unidisc features, the high-speed Fastband index and the simplified Data Search command, provide the most powerful random access addressing technique in disc file processing. Together, they facilitate programming and conserve computing capability in the UNIVAC 1004/1005 Central Processors. Unidisc instructions are simplified; a single command initiates reading or writing.

Unidisc employs a precision machined metal disc with a treated surface for data reading and recording. The disc, similar to a phonograph record, is permanently enclosed in a protective cartridge. Each side of the disc stores one million characters, the equivalent of 12,500 80-column punched cards.

In operation, the disc cartridge is placed on a Unidisc handler which contains all necessary components and circuitry. A master handler, and up to five slave handlers, can be on line simultaneously. Thus, a UNIVAC 1004 or 1005 can work with as many as six disc surfaces, providing millisecond access to the equivalent of 75,000 cards.

Unidisc provides true mass storage. Reversing each disc doubles total capacity, and discs can be interchanged for different applications. Surfaces can be completely erased and reused for new applications.

Up to now, random access data processing has been restricted to higher-priced computer systems. With Unidisc, this efficient technique is available to the punched card user at a reasonable price.



Unidisc provides:

Random Access

Unidisc adds data processing flexibility to 1004 and 1005 Systems. Many applications which require non-sequential searches through masses of data are now practical for the punched card user. For these, Unidisc offers random access data processing—high speed random access to large files of information stored on interchangeable discs.

Information stored in tracks on the Unidisc surface is accessed by movable read/write heads. Simplified programming methods direct a read/write head to the track in which the desired information is stored, locate the data, and transfer it to the UNIVAC 1004/1005 Central Processor. The 1004/1005 is not interlocked during Unidisc operations. Both units operate independently until the information is available, then work together to transfer information at microsecond speeds.

Take the case of a typical order processing application. With the entry of the data from the source document, a UNIVAC 1004/1005 System equipped with Unidisc can produce a final invoice, and update files affected by the transaction, including inventory and accounts receivable. In addition to providing back-order information, data for producing purchase orders, product history files, and sales analysis can be created for subsequent print-out.

Many organizations, regardless of size, can benefit with random access data processing. A UNIVAC 1004 or 1005 equipped with Unidisc offers faster, more efficient operation in such applications as:

- Billing • Inventory & Procurement
- Accounts Receivable • Inventory Control
- Sales Analysis • Production Control
- Order Entry • General Accounting

Simplified Programming

Fastband and Data Search unlock Unidisc's inherent high-speed random access capabilities. A single computer instruction, the Data Search command, locates and reads the record. A unique indexing principle, Fastband, is the key to combining simplified programming with high-speed operation, while conserving computing power. Data is checked automatically after reading or writing.

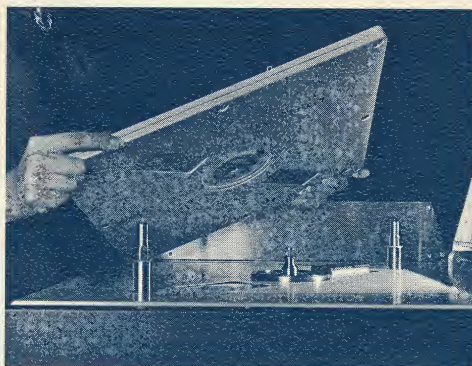
Fastband has a series of identifiers which breaks down the information stored on the disc and positions the read/write heads over the desired record without going serially through all the data on the disc. This Fastband technique simplifies file layout, and eliminates extensive systems design and elaborate programming schemes for random access addresses.

Economy

Unidisc is extremely economical. A UNIVAC 1004 or 1005 equipped with Unidisc pays off in random-access handling of both routine and specialized data processing applications. All necessary information to completely process each transaction is available to the 1004/1005 Central Processor. Since up-to-date information is in Unidisc's files, many clerical and preparatory machine operations, such as preliminary sorting, are eliminated. For example, credit checks and pricing runs could be avoided in an order entry application, as could wage rating in a payroll application.

Expandable Capacity

Storage capacity becomes virtually unlimited with Unidisc, since it is a simple matter to add more discs as your volume of data expands. In addition, up to five slave handlers can be added to the master Unidisc handler, if more information must be on line. A Unidisc library provides an inexpensive, permanent record of your company's operations, either historical or



current. And, it is possible to expand the program memory of UNIVAC 1005 Central Processors by storing additional instructions in Unidisc.

Ease of Operation

Lightweight Unidiscs are easy to mount, handle and store—designed with the user in mind. Changing a disc is no harder than changing a phonograph record or a reel of magnetic tape. Your operating personnel can be trained to mount cartridges and operate handlers in a matter of minutes.

Unidisc cartridges measure $15\frac{3}{4}$ inches square and $\frac{5}{8}$ -inch thick. They can be labeled and stored on edge, as easily as phonograph albums.

Fast Access

The average time required to locate and *read* a record on a random basis is approximately 135 milliseconds, most of which is required for head movement. Since the read/write

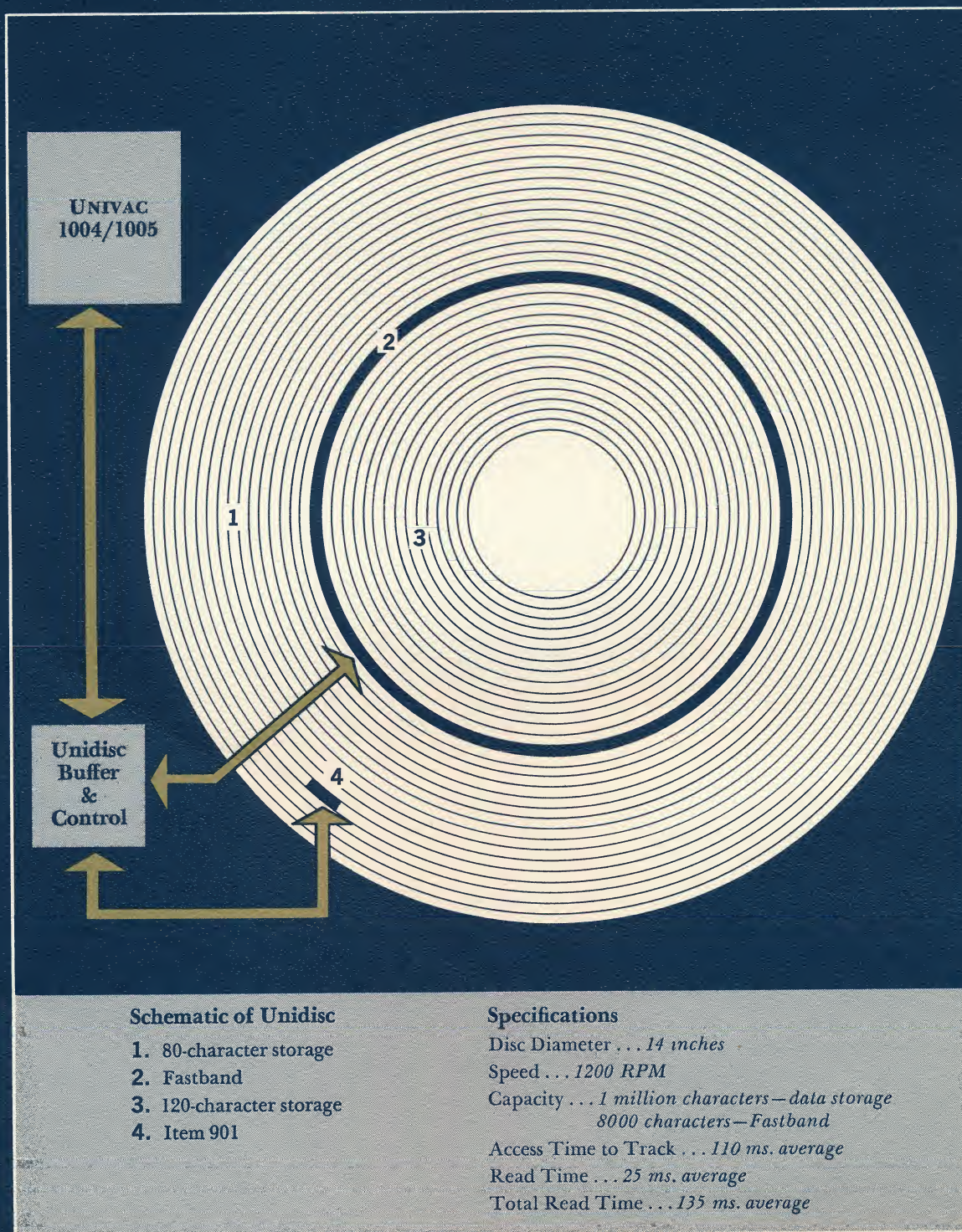
heads are already positioned over the track, the updated record can be written on Unidisc and checked in an average of 75 milliseconds.

Data Reliability

A combination of parity, bit count, and phase error checking assures that correct data is recorded. As entries are made, check characters are developed and stored with the data. Write operations are automatically followed by read-backs of the data recorded. All read operations include automatic verification of the data read by check character validation.



discription



The circular Unidisc surface is divided into two zones, for 80- and 120-character storage. Each zone has 50 concentric tracks with 100 sectors, for a total of 5000 sectors of data storage per zone. Thus, the 80-character zone will accept 400,000 characters, while the larger 120-character zone will hold 600,000 characters.

You can tailor the surface arrangement of Unidisc for your applications. If desired, the 80- and 120-character sectors can be combined to form 5000 200-character sectors. Total surface capacity remains at one million characters. Discs arranged for either mode of storage can be operated in the same system.

In addition to its 100 data tracks, each Unidisc surface contains a special Fastband index track. Fastband has 100 sectors, one for each storage track. Each sector holds 80 characters, for a total capacity of 8000.

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Here's how Data Search and Fastband work:

Data Search and Fastband give you the power to locate items stored on Unidisc with a single computer instruction, using an actual account number or similar key as a means of locating the information.

With your sequentially organized files in place, the Unidisc surface can be represented by a simple table. As you can see, Fastband repeats the last item on each storage track and identifies the track number.

Suppose you want information on item 901. The UNIVAC 1004/1005 Central Processor issues the Data Search command, asking the Unidisc buffer for item 901. Then free of all control responsibility, the 1004/1005 continues normal processing.

Through a fixed read/write head, Unidisc's buffer and control unit begins an immediate search of Fastband. Item 901 is compared with the largest item on each track; the control unit senses that 901 is on the 03 track.

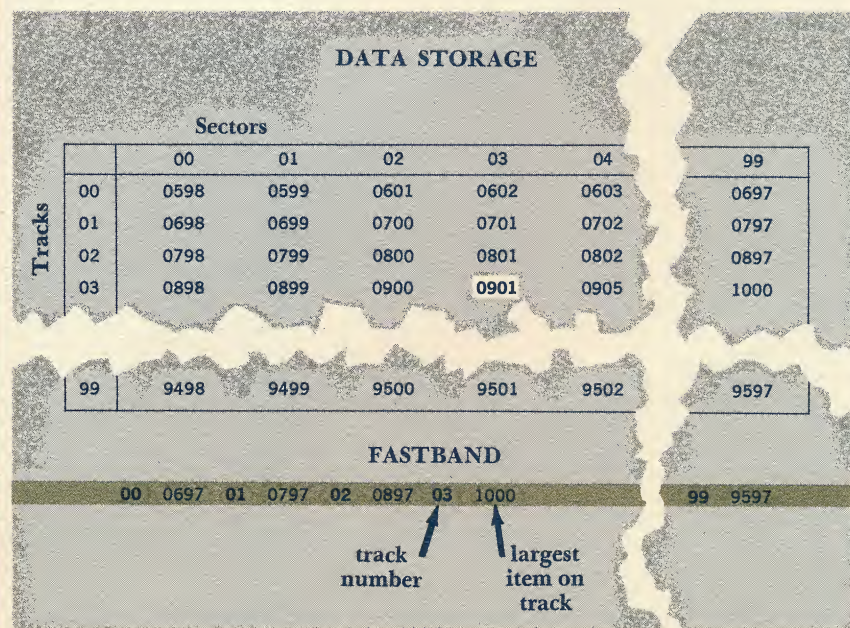
The control unit then positions a read/write head over this track; the head sends all information about item 901 and its address to the Unidisc buffer where it is held for transfer back to the central processor.

Once the Data Search command was given, Unidisc *automatically*:

1. Searched its Fastband index,
2. Found the proper data storage track,
3. Positioned a read/write head,
4. Read the record and its address into buffer storage, and
5. Held this information in storage for transfer to the central processor.

Thus, a single instruction initiates five distinct operations, simplifying programming and conserving computing power.

After updating, the address taken from Unidisc is used to return item 901 through the buffer to the read/write head, which has remained in position over track 03. The new information is recorded, and Unidisc is now ready to process the next item.



UNIVAC 1004 and 1005 Computers

... The Most Versatile and Economical Data Processing Systems Available Today

The UNIVAC 1004 is now operating successfully in thousands of installations around the world—processing records, preparing reports, maintaining files, and performing numerous other accounting functions that give management vital up-to-the-minute information. Basically a punched-card system, the UNIVAC 1004 performs reading, processing, and printing in one self-contained unit at speeds far exceeding that of conventional tabulating equipment.

The UNIVAC 1005 offers both internally stored and control panel programming. Stored programming provides all the advantages usually associated with larger computer installations. You get a complete assembly system and also a powerful program report generator. Control panel programming techniques closely resemble those of conventional tabulating equipment. A single connection panel with built-in simplicity controls the entire system.

Both the UNIVAC 1004 and 1005 Systems are available in three models with these general specifications:

Reading:	400 or 615 cards/min
Punching:	200 cards/min
Printing:	400 or 600 lines/min
Memory Capacity:	961 or 1922 positions (1004) 2048 or 4096 positions (1005)
Memory Cycle Time:	6.5 or 8 microseconds

A wide choice of peripheral equipment is offered, including card punches, read punches, auxiliary card readers, magnetic tape units, paper tape readers, paper tape punches, and data communications terminals.

Also available with either the 1004 or 1005 Computer is the 1001 Card Controller—a high-speed, multipurpose machine which performs collating, sorting, card proving, card editing, and statistical sorting. This unit can operate independently or on-line as an additional input device. Two card feeds operate at 1000 cpm, or 2000 cpm with both feeds operating simultaneously. The UNIVAC 1001 has a 256-position magnetic core storage with a cycle time of 12 microseconds. Processes include addition, subtraction, programmed multiplication, comparing and data transfer.

With this wide range of optional peripheral equipment, UNIVAC 1004/1005 Systems can be expanded as your data processing needs increase.



UNIVAC DIVISION OF SPERRY RAND CORPORATION